West Side Edition. For residents of Sunset, Roy, Clinton and Clearfield

EnviroNews

Updating environmental issues and activities at Hill Air Force Base, Utah

Winter/Spring 2003

Groundwater contamination discovered in Clearfield

The Air Force has discovered an area of contaminated groundwater beneath a section of extreme northeast Clearfield. The source of the contamination appears to be Hill AFB.

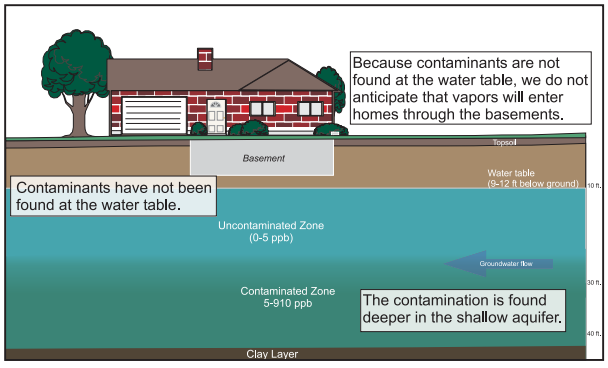
Drinking water supplies are not affected by the contamination and it does not appear that anyone is being exposed to the chemicals in the water.

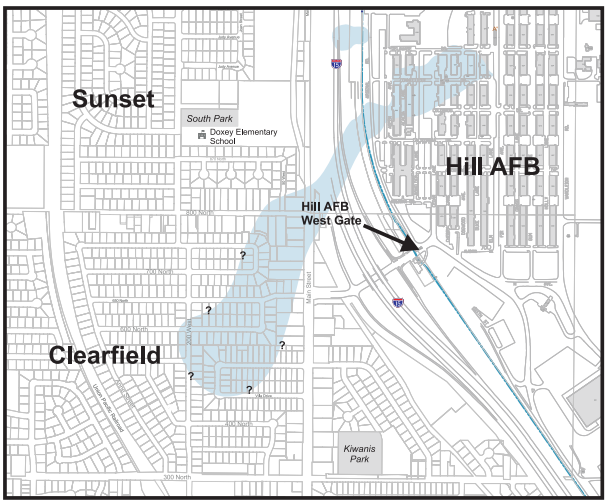
The contamination is not near the ground surface, nor is it near the top of the water table, which is located at about 10 feet in the area of concern. The contaminated water is about 30 feet deep, meaning there is a 20-foot layer of clean groundwater on top of the contamination.

"Learning about groundwater contamination is never good news," said Bob Elliott, who heads up Hill's environmental cleanup program. "Fortunately, we have a situation here that the contamination is deep enough that people will not be exposed to the chemicals."

The situation in Clearfield is different than what was found a few miles north in Roy. There, groundwater is much closer to the surface and there is contamination at the water table. Without a layer of clean water to act as a buffer, chemical vapors have seeped into a few homes in Roy. Air Force officials do not expect the same problem in Clearfield.

The primary chemical contaminant is trichloroethene, or TCE, a degreasing solvent popular in the 1960s and 1970s. The source of the contamination appears to be an old oil-water separator located in the 1200 area on base. No one knows when or how much TCE was dumped or spilled.





This map shows the area of contamination defined to date. The contamination, part of Operable Unit 10, is about 30 feet underground and has not affected drinking water.

The Air Force will spend the next few months taking more groundwater samples in an attempt to accurately define the area of contamination. The map shown above, will most likely change as additional monitoring points are tested. However, a number of monitoring points west of the Union Pacific Railroad tracks have not found any contamination. In addition, the spring in Steed Park has also tested negative for TCE.

There's not enough information yet to determine if the plume is moving. If it is moving, it is likely to be moving very slowly—probably less than 200 feet per year. As more data are gathered, geologists will be able to describe the plume more accurately.

The Air Force will continue its investigation over the next several months. At the conclusion of the investigation, a baseline risk assessment will be published, which details any potential risks to the community. A cleanup plan for the area will be proposed summer 2005.

OU10

Operable Unit 10 was created in 2000 to begin more detailed investigation of contamination found near the base's West Gate.

An elusive plume

Geologists investigating the plume were able to easily locate and define the contamination on-base. However, finding the contamination off base was a more difficult issue due to the extraordinarily complex geology in the area.

Geologists were able to track the plume to the edge of Interstate 15, but were unable to find it on the west side of the freeway.

Four years and more than 100 groundwater samples later, geologists finally found the contamination in Clearfield this past summer.

InfoFair held at Holt ES

The community was invited to attend an InfoFair on Nov. 7, to learn the latest about the contamination in Clearfield. More than 70 people from the community attended the meeting. The Air Force plans to hold more InfoFairs in the future as more information becomes available.

Hill installs devices to keep chemical vapors out of homes

The Air Force has installed vapor mitigation systems in eight Roy homes to prevent chemical vapors from entering the homes. These systems have been successful at removing the vapors from the home.

The chemical vapors are coming from the groundwater, which contains traces of solvents that were dumped on to the ground at Hill AFB many years ago.

The chemical vapors have entered the homes due to a unique combination of circumstances—groundwater at basement level and chemicals at the top of the water table.

Since January 2002, the Air Force has sampled more than 100 homes looking for traces of trichloroethene, or TCE, in the air. TCE vapors were found in seven homes.

"As soon as we knew about the detections, we contacted the homeowners and let them know what we found," said Steve Hicken, an environmental engineer at Hill AFB. "Unfortunately, we weren't sure exactly what was the best action to take."

Hicken, who manages the environmental investigations at Hill, said he and others immediately began researching what others had done in similar situations.

"We visited a site in Colorado where chemical vapors had been found in more than 350 homes," Hicken said. "They had been working on this for a number of years and had developed a very workable solution."

Viewed from the outside, the system blends in nicely with the exterior of the home. The blower, which draws vapors from beneath the home, is located in the enclosure on the side of the home.

That solution was to install systems designed to remove radioactive radon gas from homes. These systems use suction to remove vapors from beneath the home before they have a chance to enter.

"After talking with the folks in Colorado, we decided this was the best way to keep vapors out of the homes," Hicken said.

Technically called "slab depressurization," these systems draw all the vapors into a pipe, which carries the vapors out of the home and vents them outside. The system is simple, using only a small 100-watt blower to create the necessary suction.

Hicken said systems will be installed where TCE vapors are found above the action level of 0.43 parts per billion set by Hill AFB in conjunction with the EPA and Utah Department of Environmental Quality.

The systems, of course, will be installed by an Air Force contractor at no charge to the homeowner. The Air Force will also pay the electrical costs associated with running the system.

The systems were installed in early August, but Air Force officials are not saying it's over, yet.

The Air Force is currently retesting the homes originally tested, plus more than 50 additional homes in the area.

Hicken said that winter presents the "worst-case" scenario because furnaces can draw in air through cracks in the basement.

A pipe connected to a hole in the basement slab collects vapors from beneath the slab and vents them outside the home.

A vacuum gague, located inside the home, tells the occupant whether or not the system is operating properly.

Vapor systems prove effective

After the first round of follow-up sampling, all but one of the homes where vapors had been previously detected showed no vapors. In the one home that still had vapors, the system is being modified to better suit the type of basement.

Mail blitz

In an effort to sample the air in as many homes as possible, the Air Force sent out more than 150 certified letters to all residents west of the abandoned railroad tracks whose home sits above the known area of contamination. Those who received letters included people who had did not respond to previous attempts to sample, and those who had never before been contacted.

Sporadic detections

TCE vapors have only been found in a few homes in the area. In most cases, one home might have vapors, while all the surrounding homes do not.

Follow-up sampling

The Air Force plans to continue sampling the air in homes at least once a year for the next few years. If detections are found above the action level, the homeowners will be given the opportunity to have a vapor mitigation system installed.

New system to intercept contaminants moving into Roy

Hill AFB is nearing completion of a series of groundwater extraction wells along the Roy-Hill AFB boundary. The system is expected to be operational this Spring.

The project's primary objective is to prevent contaminated groundwater from leaving the base and flowing into Roy. According to Hill environmental officials, this will benefit both Roy residents and the Air Force.

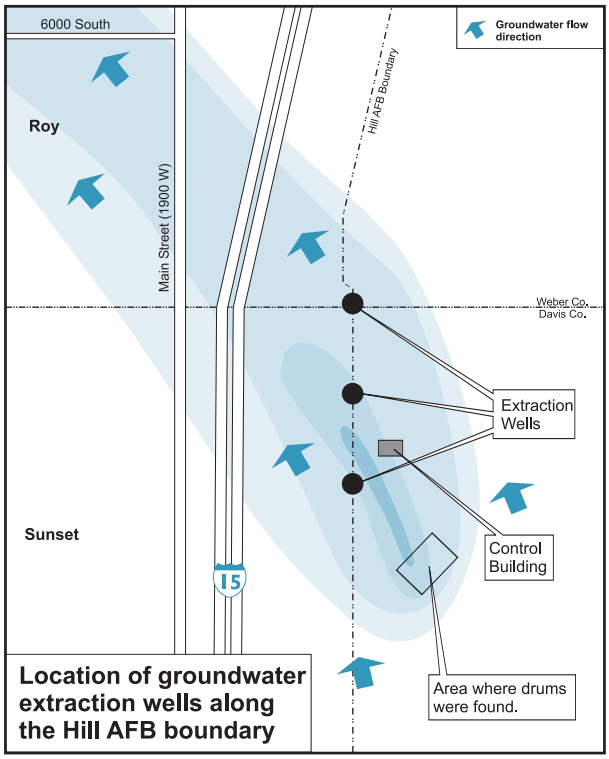
"This system will cut off the flow of contaminants into Roy," said Dave Mills, the environmental engineer overseeing the project. "While this doesn't solve the problem, it is the first step toward that goal."

The system consists of a series of three groundwater extraction wells drilled to a depth of about 120 feet. The wells will bring the contaminated water to the surface where it will be discharged to the sanitary sewer under the terms of a permit with the North Davis County Sewer Improvement District.

When fully operational, engineers hope to extract more than 30,000 gallons of contaminated water a day.

Mills said the system will benefit the Air Force as it looks for ways to clean up the source of the contamination on base. With the system in place, any disturbances to the source area that could possibly allow more contamination to enter the groundwater would be intercepted by the system before it could leave the base.

Contractors drill an extraction well near the base boundary adjacent to Roy.



Location of groundwater extraction wells along the Hill AFB boundary

While this system is not expected to have a short-term effect on the groundwater contamination in Roy, cutting off the source of the contamination from the rest of the plume will have positive impacts in the years ahead.

Mills said the Air Force is considering other interim measures in Roy to reduce the levels of contamination in the groundwater.

"We plan to gather input from the public on the kinds of things they would like us to consider doing," said Bob Elliott, Hill's cheif of environmental restoration. "With this input, we can look at designing something that will not only help to clean up the groundwater, but will meet the needs of the people living there."

Elliott said there is much work to do before a final cleanup plan can be proposed, but he would like to work with the residents along the way to ensure that what the Air Force eventually proposes as the final remedy will be acceptable.

The final cleanup plan is scheduled to be proposed in early 2005.

OU12 source located

Hill AFB environmental officials believe they have found the source of the groundwater contamination in Roy. While digging a shallow trench to bury electrical lines, contractors unearthed several old deteriorated drums containing wastes and sludges. Tests showed high levels of trichloroethene (TCE) in the residues. It's not known how many drums were dumped, nor is it known if this was a one-time dumping or a regular occurence.

Drums a windfall for the AF

Knowing the location of the source will save the Air Force a great deal of money and time. In all liklihood, finding the source using conventional methods would have taken months or years and hundreds of thousands of dollars.

More to come

This system is just the first action taken to clean up groundwater contamination in Roy. The Air Force hopes to begin at least one other early cleanup action in Roy before proposing a final cleanup action.

Roy InfoFair coming

The Air Force will hold an InfoFair sometime this spring to bring residents up to date on the current status of the cleanup. More details are forthcoming.

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Clinton cleanup system construction nearly complete

In November, 2002, Contractors working for Hill AFB, began work on the final phase of the early cleanup action in Clinton. The system became operational at the end of December and the final completion of the landscaping and maintenance buildings will be completed in the spring.

This phase consists of installing an underground collection trench to intercept contaminated groundwater moving through the area. The trench is located just west of the Union Pacific Railroad tracks at about 2300 North.

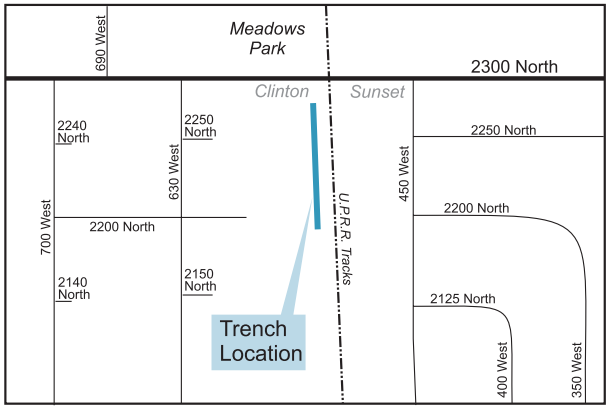
The 600-foot long, 30-foot deep trench intercepts groundwater with the highest concentrations of chemicals. The trench will not span the entire breadth of the plume, but will intercept about 90 percent of the contaminants as it slowly moves west.

Contractors inject a bentonite slurry into a trench to make a slurry wall. The slurry wall was required as part of the collection trench system to prevent ground settlement in the area.

Digging up dirt

Before the trench could be installed, crews spent a couple of weeks preparing the site for construction. The first task was to remove a home from the property. Because this was an older home, specially trained crews removed some asbestos from the home prior to demolition. Once the asbestos was safely removed and disposed of, crews demolished the home and the adjacent outbuildings.

Once the site was cleared, crews installed the sumps into which the collected groundwater will flow. Pumps, which will draw the water out of the sumps and direct to the sewer connection, were installed next.



Once the sumps were in place, the site was ready for the trencher. Trenching was only supposed to take a day to complete. However, due to a combination of wet weather and sandy soils, the trenching operation took a little longer than expected. Once the trench was completed, piping was laid at the bottom of the trench and the trench was backfilled with gravel.

Following the installation of the collection trench, crews installed a slurry wall just west of the trench. A slurry wall is an underground barrier used to stop the flow groundwater. The purpose of the slurry wall is to prevent the ground from settling in the area.

Following the installation of the slurry wall, contractors connected the sumps to the sewer line.

All that remains is the completion of the control building, which houses the monitoring instruments and other controls for operating the system. Landscaping will be completed in the spring.

That's a lot of water!

Hydrogeologists expect the trench to collect approximately 1,200 gallons of groundwater per hour. That's equivalent to 10.5 million gallons of water per year.

Effect not immediate

While this trench will intercept most of the contaminated groundwater slowly creeping west, it will not capture contaminated water already west of the trench. The trench, however, will act like a shut-off valve to the contamination. Over the next several years, the contamination already west of the trench will gradually dilute and disperse until it can no longer be detected.

Not a neighborhood "eyesore"

While the construction of the trench was a muddy mess, at times, engineers have planned a much more neighborhood friendly completion. The treatment building will look much like an ordinary domestic structure, like a house or shed, and the grounds will be landscaped with grass and trees. The end result should blend in nicely with the neighborhood.